

Claim Rejection

Claims 10-19 were rejected under 35 USC § 103(a) as being unpatentable in over *Watanabe* (US Patent 5,808,363) in view of *Isobe* (US Patent 5,716,872). For at least the reasons set forth herein, this rejection is believed to be improper, and therefore should be withdrawn. Moreover, as it may apply to the remaining claims, applicants respectfully submit that newly added claims 19-22 are patentable over the applied art.

It is established that a *prima facie* case of obviousness requires that **all of the elements** be found in the prior art. Necessarily, **if one element of the prior art is missing** from the applied art, a *prima facie* case of obviousness cannot be established. Moreover, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is a teaching, suggestion or motivation to do so found in the references relied upon or in the knowledge generally available to one having ordinary skill in the art. However, hindsight is never an appropriate motivation for combining references and/or knowledge generally available to one having ordinary skill in the art. Accordingly, relying upon hindsight knowledge of an applicant's disclosure when the prior art does not teach nor suggest such knowledge results in the use of the invention as a template for its reconstruction.

Independent claims 10, 13, and 19 each include the limitation of:

“...a first SOG layer, which is formed in side surfaces of said dummy pattern and said first insulating layer; [and]

a second SOG layer, which is formed on a top surface of said dummy pattern and said first SOG layer, said second SOG layer being denser than said first SOG layer;...”

The Office Action states that a first SOG layer 7 is taught by Watanabe; and that the reference further discloses an insulating layer 8 deposited on the SOG layer 8. Moreover, the Office states that *Watanabe*:

"...does not specifically disclose that the second layer formed on the top surface of the dummy pattern is SOG. However, Watanabe teach[es]4 the insulating film may be of any insulative material, but is preferably made of SOG (col. 3, lines 1-2). Therefore it is obvious that the insulating layer 8 could be made of SOG."

(Please refer to the bottom of page 2, and the top of page 3 of the Office Action.)

It is agreed that the reference to *Watanabe* does not specifically disclose that the fourth insulating layer 8 is SOG. In fact, the reference specifically teaches that the fourth ***is a made of a plasma oxide film***, which is not an SOG layer.

The reference to *Watanabe* is drawn to a semiconductor device having an interlayer insulating film sandwiched between upper and lower wiring layers; and an insulating film formed on the interlayer insulating film. In the Summary of the Invention, *Watanabe* discloses the an insulating film formed on the interlayer insulating film may be made of any insulative material, but is preferably organic silica (SOG), . However, in this portion of the disclosure *the insulating layer* is described only as a ***single layer***; ***and is the only layer*** that is disclosed as being SOG. To wit, the reference does not teach nor suggest that the interlayer insulating layer is SOG. (Please refer to the Abstract of *Watanabe*, as well as column 3, lines 1-2 for support for this assertion.) Therefore, the teaching of *Watanabe* cannot meet the claimed limitation of a first SOG layer with a second SOG layer thereon having the other characteristics of Applicants' independent claims cited above.

In the Description of the Preferred Embodiments, *Watanabe* teaches a first embodiment having a **first insulating film 2** of silicon dioxide layer that is formed over a semiconductor substrate 1 by **chemical vapor deposition (CVD)**. **A second insulating film 4** is formed over the fuses and the first insulating film 2. **A third insulating film 6, which is a plasma oxide**, is formed over the tungsten wiring layer 5 and the second insulating film 4 by plasma CVD. Next the **organic silica film (SOG) 7** is formed over the third insulating film 6. Thereafter the **fourth insulating layer 8 of plasma oxide** is formed over the SOG film 7. A wiring layer 9 of AlSiCu and TiN are formed over the fourth insulating layer 8; and a cover layer 10 is formed over the wiring layer 9. (Please refer to column 4, line 22, to column 5, line 7 of *Watanabe* for further details.)

From the disclosure of the first embodiment of *Watanabe* it is clear that **only one layer of the insulating layers (organic layer 7) is specifically disclosed as being SOG**. While the reference is silent on the specific material used for the second insulating film, even if it were the case that this layer were SOG (a proposition that Applicants that is made for the sake of argument; and one that Applicants in no way concede), the reference to *Watanabe* would be void nonetheless of the teaching of the **second SOG layer formed on a first SOG layer** having the characteristics specifically set forth in independent claims 10, 13, and 19. Moreover, the reference specifically recites that the **fourth insulating film 8 is a plasma oxide film**, and therefore, it does not teach that this film is a SOG layer. (It is noted that a second embodiment is disclosed by *Watanabe*, but differs from the first only in the disclosure of two dummy wiring layers.)

In summary, *Watanabe* discloses the **use of only one organic layer (SOG)** in any given embodiment. Accordingly, for at least this reason, the reference to *Watanabe* lacks the teaching of the **two SOG layers**, having the characteristics recited in independent claims 10, 13, and 19. The reference lacks at least a teaching of at least one of the claimed elements of independent claims 10, 13 and 19. As such (and without conceding to the propriety of the combination of *Watanabe* and *Isobe*, or to the asserted teachings of *Isobe*), because the applied art fails to disclose at least one of the elements of these claims, a *prima facie* case of obvious has not been properly established. Therefore, it is respectfully submitted that independent claims 10, 13, and 19, and the claims that depend directly or indirectly therefrom are believed to be allowable over the applied art. Allowance is earnestly solicited.

Conclusion

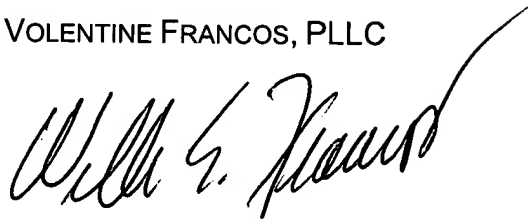
Withdrawal of all objections and rejections is respectfully requested. For at least the reasons set forth above claims 10-22 are believed to be allowable over the applied art. Allowance thereof is earnestly solicited.

In the event that there are any outstanding matters remaining in the present application, the Examiner is invited to contact William S. Francos, Esq. (Reg. No. 38,456) at (610) 375-3513 to discuss these matters.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 50-0238 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

VOLENTINE FRANCOS, PLLC

A handwritten signature in black ink, appearing to read "William S. Francos", written in a cursive style.

William S. Francos

Registration No. 38,456

12200 Sunrise Valley Drive, Suite 150

Reston, Virginia 20191

Telephone No.: (703) 715-0870

Facsimile No.: (703) 715-0877

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